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**SKIN COSMETIC MATERIALS**

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SKIN COSMETIC MATERIALS

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Claims

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Skin cosmetic materials characterized by formulating them with traumatic acid and/or salts thereof.

Detailed explanation of invention

Field of the invention

This invention pertains to skin cosmetic materials obtained by incorporating traumatic acid and/or salts thereof that are capable of improving the moisture-retention function of skin.

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\* [Numbers in the right margin indicate pagination of the original language text.]

### Prior art

Conventionally, hydrophilic skin moisturizers and lipophilic emollients that can provide suitable amounts of water and oil to the skin have been incorporated in skin cosmetics to maintain healthy skin.

Glycerol, propylene glycol, polyethylene glycol, pyrrolidonecarboxylic acid, etc., are used as the skin moisturizers. However, these materials could in some cases absorb moisture from the outermost layer of skin, the horny layer (stratum corneum), and rather become the cause of moisture loss from the skin. Additionally, skin cosmetics containing a substantial amount of these materials exhibit an abnormal sensation such as stickiness, which is quite undesirable.

Also, liquid paraffin, petrolatum, olive oil, squalane, lanolin, synthetic ester oils, etc., are employed as the emollients. However, when these substances are incorporated at quantities capable of providing sufficient prevention of water evaporation from the skin, they cause the problem of obstructing the skin's normal metabolism.

### Teaching of the invention

The present inventors had focused on the above drawbacks of skin moisturizers and skin emollients and conducted rigorous investigations aimed at providing skin cosmetic materials that can improve or rejuvenate the inherent moisture retention function of the skin, rather than relying on supplying water to the skin from a formulation or merely preventing loss of water from evaporation, and as a result, discovered that cosmetic materials incorporated with traumatic acid and/or salts thereof can bring the effect that conforms to the aforementioned objectives.

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Skin moisture constantly moves from the inner layer of skin to the outer layer and evaporates from the horny layer, namely moving outward from the dermis to the basal layer of the epidermis and further to the stratum corneum as the water content continues to change with a declining slope. The water evaporation is regulated by a defense function (barrier function) made up of the granules on the top of the granular layer to the horny layer with a tight cellular structure, and the amount of said water evaporation (transepidermal water loss, hereafter as TWL) from a healthy skin surface of the forearm area is in the range  $0.2-0.3 \text{ mg/cm}^2$ , and is normally controlled to  $0.25 \text{ mg/cm}^2$  or less. On the other hand, the TWL from a commonly observed dry skin or the type of dry skin often seen in aging skin is at the upper end of the above range, or shows a value that far exceeds the upper value, clearly showing a deteriorating water retention function of the skin. This is either because the dry skin condition has exceeded the limit of normal regulation function that the defense mechanism of stratum corneum can provide or because the defense function is deteriorating.

Therefore, if one can compact and increase the tightness of the horny layer and the granular layer structure and activate the defense function, the water retention function of the skin

can be improved and the skin can be kept in its healthy state. Furthermore, the dry skin condition can be improved or repaired. Accordingly, the present inventors had conducted rigorous investigations on the benefits of traumatic acid and its salts on skin, and as a result, discovered that the skin cosmetic materials of the present invention can normalize the tissues from the lamellar granules on the upper granular layer to the corneal layer of the epidermis, improve the dry skin condition by improving the inherent water retention power of the skin, or maintain the healthy state of the skin to prevent it from aging, and provide a skin-beautifying effect by imparting moistness, softness, elasticity and shine to the skin.

In the case of the cosmetic materials of the present invention, there is no need to incorporate skin moisturizers or skin emollients as the conventional cosmetic materials do, and therefore, there is no concern of obstruction of normal skin physiological functions.

#### Objective of the invention

The objective of the present invention lies in providing skin cosmetic materials having a skin-beautifying effect via maintaining a healthy skin condition or repairing damage through improving the inherent water retention power of the skin.

#### Constitution of the invention

The present invention pertains to skin cosmetic materials characterized by formulating them with traumatic acid and/or salts thereof.

#### Specific explanation of the constitution

Traumatic acid is a substance having the activity of inducing cell division and exists in the pods of young kidney beans, and also is present in many plants of the bean family and others. The characteristic physical properties are shown in the following.

Chemical name: 2-dodecenedioic acid [ $\text{HOOC}(\text{CH}_2)_8\text{CH}=\text{CHCOOH}$ ]

Chemical formula:  $\text{C}_{12}\text{H}_{20}\text{O}_4$

Molecular weight: 228.28

Appearance: White powder

Melting point: 166-167°C (trans form)

Solubility: Very soluble in water, and soluble in ether, benzene and chloroform

Also, traumatic acid is present in a substantial amount in the pods of young kidney beans, and it can be easily extracted from the plant by heating it to 30-50°C in water or in an organic solvent such as alcohol, ether, benzene or chloroform. The method of extraction is described in Proc. Nat. Acad. Sci., 25, 323, 1939.

The traumatic acid or salts thereof incorporated in the cosmetic materials of the present invention have the effect of promoting the division of the basal cells in the epidermis and improving the skin function. Furthermore, they can promote blood circulation, repair or improve the inherent skin function and maintain the healthy condition of the skin, and are found to provide the effect of maintaining so-called beautiful skin by imparting moistness, softness and shine. The effect is particularly recognizable when the materials are utilized on aging skin.

Mono-salts or di-salts formed from traumatic acid and alkalis, for example, the alkali metal salts such as potassium salt and sodium salt, alkaline amino acid salts such as lysine salt, ornithine salt and arginine salt and alkanolamine salts such as monoethanolamine salt and triethanolamine salt, can be cited as examples of the aforementioned salts of traumatic acid utilized in the present invention.

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In the present invention, the suitable amount of incorporation of traumatic acid and/or salts thereof is in the range of 0.01-2 wt%, based on the total amount of the skin cosmetic material (composition). If the amount of incorporation is below 0.01%, no sufficient effect can be recognized. On the other hand, if the amount of incorporation exceeds 2 wt%, no additional benefit can be observed with the additional amount.

The cosmetic materials of the present invention can be suitably utilized in lotions, milky lotions, creams and facial packs.

Also, in addition to that mentioned previously, colors, fragrances, preservatives, surfactants, pigments and antioxidants can be suitably added to the cosmetic materials of the present invention in ranges in which the objective of the present invention is purportedly achieved.

#### Application examples

The present invention is further explained in detail using the below application examples and text examples.

Also, measurement methods and evaluation methods of TWL values, TWL change rates, horny layer turnover rates and horny layer peeling characteristics are shown in the following.

##### (1) TWL value

The method determining the humidity change in the air on the skin surface in a sealed condition within a given period time by measuring the electric impedance is utilized.

That is, the skin surface of a test subject is sealed with a testing cell, and purposely dried air is forced into the cell until the cell is fully filled with dry air. At the time of stopping the dry air, the relative humidity  $RH_s$  (%) in the cell is measured. After standing for 10 min, the relative humidity  $RH_{10}$  (%) in the cell is measured again, and the TWL value is calculated from the humidity change by the following equation.

$$\textcircled{1} \quad \text{TWL 值} = \frac{(RH_{t,e} - RH_s) \times Dt \times V \times 6}{S \times 100} \quad (\text{mg/cm}^2/\text{hr})$$

Key: 1      Value

Where, Dt: density (mg/L) of saturated water vapor in air at measuring temperature ( $t^\circ\text{C}$ )

V: Cell volume (L)

S: Area of measurement ( $\text{cm}^2$ )

### (2) TWL change rate

TWL values were measured before and after topically applying the samples (cosmetic materials), and the change rates were determined by the following equation, and the TWL reduction effect (improving effect on water retention function) was evaluated.

$$\textcircled{1} \quad \text{TWL 值 变化率} = \frac{\text{TWL}_B - \text{TWL}_A}{\text{TWL}_B} \times 100 (\%)$$

Key: 1      Change rate

TWL before topically applying sample (cosmetic material):  $\text{TWL}_B$

TWL after topically applying sample (cosmetic material):  $\text{TWL}_A$

### (3) Measurement method of turnover rate of horny layer

An ointment was prepared by blending 5 wt% fluorescent dye dansyl chloride in white petrolatum, followed by topically applying it to the skin of the forearms of test subjects for 24 h using a sealing tape, to induce permeation and bonding of dansyl chloride. Subsequently, a test sample was applied twice daily (morning and evening) on the same site, and the fluorescence of the dansyl chloride was monitored daily, and the number of days for which fluorescence disappeared was used as the turnover rate of the skin horny layer. The normal skin turnover rate is 14-16 d, while that of aging skin extends to 18 d. On the other hand, when a preventing effect on skin aging exists, the number is shortened to about 12 d.

#### (4) Peeling characteristics of horny layer cells

Scotch tape (Nichiban mending tape) was attached to skin to induce adherence of the horny cells on the skin surface to the tape, which was then peeled. The condition of the horny cells on the tape was examined in detail under a scanning microscope, and the peeling characteristics of the horny cells were classified in accordance with the evaluation standards of Table 1, from which the index was determined.

Table 1. Evaluation standards for peeling characteristics of horny cells

① 剝離した角質細胞の状態	② 指 数
③ スケールを認めず	1
④ 小スケールが点在	2
⑤ 小～中スケールが点在	3
⑥ 小～中スケールが顕著	4
⑦ 大スケールが顕著	5

Key: 1 Condition of peeled horny cells  
 2 Index  
 3 Scaling not observed  
 4 Scattering small scaling  
 5 Scattering small-medium scaling  
 6 Significant small-medium scaling  
 7 Significant large scaling

Here, the peeling characteristics of horny cells are used as the indicators for evaluating the structural characteristics of the horny layer, and in general the intercellular bonding is weak in dry skin and in aging skin, and that a higher index is observed when the texture of the structure is not as tight.

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#### Application Examples 1-3 Comparative Example 1

(Skin cream)

Skin creams of Application Examples 1-3 of the present invention and Comparative Example 1 were prepared by incorporating the traumatic acid and/or salts thereof obtained in the aforementioned test example [sic], and each of the experiments below was conducted.

## (1) Composition (wt%)

① 原料成分		② 比較例	③ 実施例		
		② 1	1	2	3
(A)	・蜜ロウ④		2.0		
	・ステアリン酸⑤		5.0		
	・ステアリルアルコール⑥		3.0		
	・還元ラノリン⑦		2.0		
	・スクアラン⑧		15.0		
	・ポリオキシソルビタンステアレート⑨		3.0		
	・ソルビタンステアレート⑩		3.0		
	・トラマチン酸⑪	—	0.05	—	0.5
	・トラマチン酸モノNa塩⑫	—	—	0.5	0.5
(B)	・プロピレングリコール⑬		5.0		
	・メチルパラベン⑭		0.2		
	・精製水⑮		⑮ 総量を100とする残量		

- Key:
- 1 Ingredient
  - 2 Comparative Example
  - 3 Application Example
  - 4 Beeswax
  - 5 Stearic acid
  - 6 Stearyl alcohol
  - 7 Reduced lanolin
  - 8 Squalane
  - 9 Polyoxysorbitan stearate
  - 10 Sorbitan stearate
  - 11 Traumatic acid
  - 12 Monosodium traumatate
  - 13 Propylene glycol
  - 14 Methylparaben
  - 15 Purified water
  - 16 Balance to total amount of 100

## (2) Preparation method

Each skin cream was prepared by heating ingredients (A) and ingredients (B) to 80°C, respectively, until all were dissolved, followed by mixing and agitating the two until the temperature cooled down to 30°C.



### Test Example 1

The effects exerted on TWL and the peeling characteristics of horny cells of the skin by applying the skin creams of Application Examples 1-3 and that of Comparative Example 1 were investigated.

#### (1) Experimental method

Sixty test subjects (females aged 20-25) with normal healthy skin were divided into 3 groups (groups A, C and E), 20 test subjects in each group. Also, 60 test subjects (females aged 20-25) with normal dry skin were divided into 3 groups (groups B, D and F), 20 test subjects in each group.

Prior to testing, TWL was measured from the skin surface of the left and right forearms of each test subject, and the mean value of each group was calculated. The skin cream of Comparative Example 1 was applied on the left forearm of each test subject, while the skin creams of Application Example 1, Application Example 2 and Application Example 3 were applied on the right forearms of groups A and B, groups C and D, and groups E and F, respectively, twice daily (morning and evening) continuously for 1 month. TWL was measured from the skin surface of the left and right forearms of each test subject, where the skin cream was applied, on the day after the day of the last application. Also, the peeling characteristics of the horny cells were evaluated.

Also, after completing the topical application, the skin condition of the forearms and the body condition of each test subject were examined by a doctor, and no abnormality was observed.

#### (2) Results

Table 2 shows the TWL change rates obtained from the TWL values prior to application and the TWL values after application of the skin creams, as well as the indices of the peeling characteristics of horny cells (each value represents the mean of 20 test subjects of each group).

From the results in Table 2, the effects of the skin creams of Application Examples 1, 2 and 3 of the present invention were verified as follows.

(1) With respect to the normal healthy skin of groups A, C and E, even though the original water retention functions were maintained at normal conditions such that the effects of application of the skin creams of the present invention (Applications Examples 1, 2 and 3) were difficult to recognize, there were some directional improvements compared with the skin cream of Comparative Example 1.

(2) With respect to the dry skin of groups B, D and F, significant improvements of TWL values were observed on the skin surfaces of the right forearms topically applied with the skin creams of the present invention (Application Examples 1, 2 and 3) compared with the skin

surfaces of the left forearms (Comparative Example 1), and the values were either the same or close to those of normal healthy skin. Comparison of the skin creams of the present invention showed that the skin cream of Application Example 3 exhibited the highest improving effect on the water retention function, followed by that of Application Examples 2 and 1. Additionally, the same results were obtained from the experiments of the peeling characteristics of horny cells.

In other words, the skin creams of Application Examples 1, 2 and 3 of the present invention showed the effect of maintaining the condition of normal healthy skin of groups A, C and E, while also showing the effect of improving the skin condition of groups B, D and F approaching that of normal healthy skin.

The results reveal that the traumatic acid and/or salts thereof incorporated in the skin creams of Application Examples 1, 2 and 3 of the present invention act effectively on the epidermal cells, improve the cellular bonding forces in the horny layer, finely tighten the structure, and improve the water retention function of the skin, and are highly safe materials which exert no obstruction to the normal physiological function of the skin.

Table 2      ③      ⑥

① 被験者及び前腕部位	② 塗布試料	TWL値 (ng/cm <sup>2</sup> /hr)		TWL値 変 化 率 (%)	角質細胞 剝離特性 ⑦
		④ クリーム 塗布前	⑤ クリーム 塗布後		
Aグループ健康皮膚 ⑧ (20名) ⑩	⑨ 左	比較例 1 ⑪ 0.254	0.249	2.1	1.8
	⑨ 右	実施例 2 ⑫ 0.232	0.217	6.3	1.7
Bグループ乾燥皮膚 ⑧ (20名) ⑩	⑨ 左	比較例 1 ⑪ 0.290	0.280	3.4	2.7
	⑨ 右	実施例 2 ⑫ 0.298	0.247	17.1	1.9
Cグループ健康皮膚 ⑧ (20名) ⑩	⑨ 左	比較例 1 ⑪ 0.241	0.233	3.5	1.6
	⑨ 右	実施例 2 ⑫ 0.265	0.244	8.1	1.7
Dグループ乾燥皮膚 ⑧ (20名) ⑩	⑨ 左	比較例 1 ⑪ 0.309	0.294	4.7	2.4
	⑨ 右	実施例 2 ⑫ 0.293	0.236	19.3	1.3
Eグループ健康皮膚 ⑧ (20名) ⑩	⑨ 左	比較例 1 ⑪ 0.240	0.233	3.1	1.4
	⑨ 右	実施例 3 ⑬ 0.232	0.208	10.5	1.4
Fグループ乾燥皮膚 ⑧ (20名) ⑩	⑨ 左	比較例 1 ⑪ 0.301	0.289	4.0	2.5
	⑨ 右	実施例 3 ⑬ 0.320	0.239	25.3	1.4

- Key: 1 Test subjects and site of forearm  
 2 Sample of topical application  
 3 Value  
 4 Prior to topical application of cream  
 5 After topical application of cream  
 6 TWL change rate

- 7 Peeling characteristics of horny cells
- 8 Healthy skin group (20 test subjects)
- 9 Left
- 10 Right
- 11 Comparative Example
- 12 Application Example
- 13 Dry skin group (20 test subjects)

### Test Example 2

The effects exerted on TWL and the horny cell turnover rate of normal and aged/dry skin from applying skin cream of Application Example 3 of the present invention and Comparative Example 1 were investigated.

#### (1) Experimental method

A total of forty new test subjects, group G of 20 test subjects (females aged 20-25) with normal healthy skin and group H of 20 test subjects (females aged 50-60) with dry skin caused by aging were subjected to testing. Prior to testing, TWL was measured from the skin surfaces of the left and right forearms of each test subject. Afterward, an ointment containing dansyl chloride was topically applied on the skin surface of the left and right forearms for 24 h using a sealing tape. Next, the skin cream of Comparative Example 1 was applied on the skin surface of the left forearm of each test subject, while the skin cream of Application Example 1 [sic; 3] was applied on the skin surface of the right forearm of each test subject of groups G and H, twice daily (morning and evening) continuously for 1 month. The fluorescence was monitored daily. TWL was measured from the skin surfaces of the left and right forearms of each test subject, where the skin creams were applied, on the day after the day of the last application.

Also, after completing the topical application, the skin condition of the forearms and the physical condition of each test subject were examined by a doctor, and no abnormality was observed.

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#### (2) Results

Table 3 shows the TWL before and after topical application of the skin cream and the TWL change rates obtained from these TWL values, as well as the horny cell turnover rates (each value represents the mean of 20 test subjects of each group).

Table 3 ③

① 被験者及び前腕部位	② 塗布試料	TWL値 (mg/cm <sup>2</sup> /hr)		TWL値 変化率 ⑥ (%)	角質層 ターンオーバー 速度 (日) ⑦
		④ クリーム 塗布前	⑤ クリーム 塗布後		
⑧ Gグループ健康皮膚 (20名)	⑨ ⑪ 左 比較例 1	0.243	0.234	3.5	1.5
	⑩ ⑫ 右 実施例 3	0.260	0.237	8.7	1.5
⑬ Hグループ老化乾燥 皮膚 (20名)	⑨ ⑪ 左 比較例 1	0.489	0.479	2.0	1.8
	⑩ ⑫ 右 実施例 3	0.451	0.265	41.3	1.5

- Key:
- 1 Test subject and site of forearm
  - 2 Sample of topical application
  - 3 Value
  - 4 Prior to topical application of cream
  - 5 After topical application of cream
  - 6 TWL change rate
  - 7 Horny cell turnover rate (day)
  - 8 Healthy skin G group (20 test subjects)
  - 9 Left
  - 10 Right
  - 11 Comparative Example
  - 12 Application Example
  - 13 Aging skin H group (20 test subjects)

From the results in Table 3, the effects of the skin cream of Application Example 3 of the present invention were verified as shown in the following.

(1) With respect to the normal healthy skin of group G, the original normal skin function was maintained such that the effect of application of the skin cream (Application Example 3) of the present invention on horny cells turnover rate was not observed. With respect to TWL, the same results as in Test Example 1 were obtained.

(2) With respect to the aging/dry skin of group H, an improving (shortening) effect on the horny cells turnover rate was observed on the skin surfaces of the right forearms with the skin cream of the present invention topically applied (Application Example 3) compared with the skin surfaces of the left forearms (with the skin cream of Comparative Example 1 topically applied), and the value was close to that of a normal healthy skin. With respect to TWL, the same improving effect (decrease of TWL value) observed on the normal dry skin in Test Example 1

was observed with topical application of the skin cream of the present invention (Application Example 3), giving values equal to or close to that of panelists with normal skin.

In other words, the skin cream of Application Example 1 //should be 3// of the present invention showed the effect of accelerating the corny cells turnover rate of aged/dry skin to close to that of normal healthy skin, while also showing the effect of improving the water retention function.

### Test Example 3

Skin creams of Comparative Example 1 and Application Examples 1-3 were topically applied, respectively, to 30 test subjects (females aged 26-34) who complained of dry skin, twice daily (morning and evening) continuously for one month. The skin condition of the forearms and the body condition of each test subjects were examined by a doctor, and no abnormality was observed.

Table 4 shows the results of investigation of the effects on moistness, softness, elasticity and shine of the skin of all test subjects after topical application of the skin creams.

The results in Table 4 clearly showed that the skin creams of Application Examples 1-3 incorporated with traumatic acid and/or salts thereof exhibited significantly superior effects compared with the skin cream of Comparative Example 1.

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Table 4

① 項目	② 評 価	③ 塗 布 試 料			
		④ 比較例 1	⑤ 実 施 例		
			1	2	3
⑥ ⑬ ⑭ 潤 滑 性	⑦ 非常に良い	0	4	1 6	1 9
	⑧ 良	2	1 2	7	7
	⑨ や 良	5	8	5	3
⑥ ⑬ ⑭ 性	⑩ 変化	2 3	6	2	1
	⑪ や	0	0	0	0
⑫ ⑬ ⑭ 柔 軟 性	⑦ 非常に良い	0	4	1 4	2 2
	⑧ 良	3	8	8	8
	⑨ や 良	6	1 1	5	0
⑬ ⑭ 弾 力 性	⑩ 変化	2 0	7	3	0
	⑪ や	1	0	0	0
⑬ ⑭ 性	⑦ 非常に良い	0	9	1 9	2 4
	⑧ 良	3	7	4	5
	⑨ や 良	6	9	4	1
⑬ ⑭ 性	⑩ 変化	1 9	5	3	0
	⑪ や	2	0	0	0
⑭ 艶	⑦ 非常に良い	0	1 0	1 8	2 2
	⑧ 良	2	9	4	5
	⑨ や 良	3	9	6	2
⑭ 性	⑩ 変化	2 5	2	2	1
	⑪ や	0	0	0	0

Key:	1	Item
	2	Evaluation
	3	Topically applied sample
	4	Comparative Example
	5	Application Example
	6	Moistness
	7	Much better
	8	Better
	9	Slightly better
	10	No change
	11	Slightly worse
	12	Softness
	13	Elasticity
	14	Shine

#### Application Examples 4-5, Comparative Example 2

(Skin lotions (double-layered type))

Each skin lotion was prepared in the same manner as in Application Example 1, by incorporating sterol glycoside obtained in the aforementioned test example [sic], and each of the experiments was conducted.

#### (1) Composition

① 原 料 成 分		② 2 (wt%)	③ 実 施 例	
			4 (wt%)	5 (wt%)
(A)	トラマチン酸④	—	0.05	—
	トラマチン酸⑤ モノリジン塩	—	—	2.0
	オリーブ油⑥		15.0	
	ミリスチン酸⑦ イソプロピル		5.0	
	ポリオキシ⑧ エチレンノニル			
	フェニルエーテル		0.5	
(B)	グリセリン⑨		5.0	
	メチルパラベン⑩		0.1	
	エタノール⑪		7.0	
	精製水⑫	⑬	総量を100とする残量	

Key:	1	Ingredient
	2	Comparative Example
	3	Application Example
	4	Traumatic acid

- 5 Monolycine traumatate
- 6 Olive oil
- 7 Isopropyl myristate
- 8 Polyoxyethylene nonyl phenyl ether
- 9 Glycerol
- 10 Methylparaben
- 11 Ethanol
- 12 Purified water
- 13 Balance to total amount of 100

## (2) Preparation method

Ingredients (A) and (B) were dissolved and mixed, respectively, until homogeneous, followed by mixing and agitating ingredients (A) and (B) to disperse them, which were then filled in containers.

The lotion was topically applied to the skin after shaking and dispersing the content until homogeneous.

## Test Example 4

Skin lotions of Comparative Example 2 and Application Examples 4-5 were topically applied, respectively, to 30 test subjects (females aged 26-34) who complained of dry skin, twice daily (morning and evening) continuously for one month.

The skin condition of the forearms and the body condition of each test subject were examined by a doctor, and no abnormality was observed. Table 5 shows the results of investigation of the effects on moistness, softness, elasticity and shine of the skin after topical application of the skin creams.

Table 5

① 項目	② 評価	③ 比較例 2	④ 実施例	
			4	5
⑤ 湿润性	⑥ 非常に良い ⑦ 良い ⑧ やや良い ⑨ 変化なし ⑩ やや悪い	0 1 7 2 2 0	4 1 6 7 3 0	1 7 7 5 1 0
⑪ 柔軟性	⑥ 非常に良い ⑦ 良い ⑧ やや良い ⑨ 変化なし ⑩ やや悪い	0 2 7 1 9 2	5 1 4 7 4 0	1 7 9 4 0 0
⑫ 弾力性	⑥ 非常に良い ⑦ 良い ⑧ やや良い ⑨ 変化なし ⑩ やや悪い	0 4 7 1 9 0	9 1 0 7 4 0	1 8 8 3 1 0
⑬ 艶	⑥ 非常に良い ⑦ 良い ⑧ やや良い ⑨ 変化なし ⑩ やや悪い	1 2 7 1 9 1	7 1 2 6 5 0	1 9 5 4 2 0

- Key:
- 1 Item
  - 2 Evaluation
  - 3 Comparative Example
  - 4 Application Example
  - 5 Moistness
  - 6 Much better
  - 7 Better
  - 8 Slightly better
  - 9 No change
  - 10 Slightly worse
  - 11 Softness
  - 12 Elasticity
  - 13 Shine

The results in Table 5 clearly showed that the skin lotions of Application Examples 4-5, particularly the skin lotion of Application Example 5, incorporated with traumatic acid and/or salts thereof exhibited significantly superior effects, compared with the skin cream of Comparative Example 2.



### Effect of the invention

The cosmetic materials of the present invention incorporated with traumatic acid and/or salts thereof provide skin-beautifying effect via maintaining a healthy skin condition or repairing damage through improving the inherent water retention power of the skin, and impart moistness, softness, elasticity and shine to the skin.